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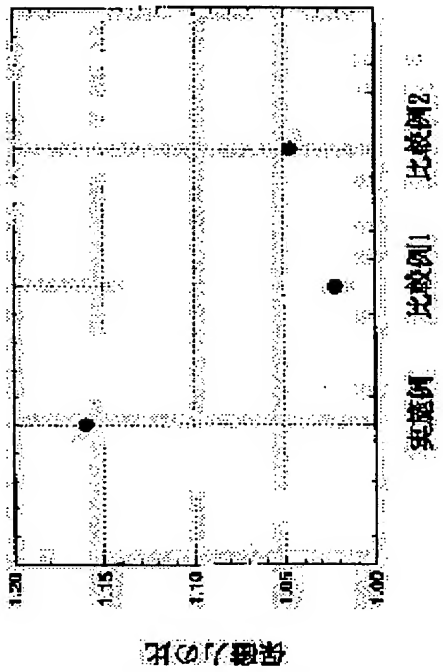
(54) MAGNETIC RECORDING MEDIUM AND METHOD FOR PRODUCING SAME

(57)Abstract:
PROBLEM TO BE SOLVED: To provide a magnetic recording medium using a glass substrate and having high magnetic anisotropy and coercive force.
SOLUTION: A linear texture is formed on the surface of a glass substrate and an amorphous film containing at least Ni and P is formed by sputtering. The discoid substrate with the formed amorphous film is held in the air at room temperature and then heated and a Cr-base under film, a Co-base magnetic film and a protective film are successively formed on the amorphous film by sputtering.



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CLAIMS

[Claim(s)]

[Claim 1] The magnetic-recording medium which is a magnetic-recording medium which consists of the substrate film, Co system magnetic film, and the protective coat which consist of the disk-like glass substrate with which the crossing Rhine-like texture was formed in the front face, the amorphous film which contains at least nickel and P which were formed of the spatter on it, Cr, or a Cr alloy, and is characterized by having a magnetic anisotropy in a circumferencial direction.

[Claim 2] The magnetic-recording medium according to claim 1 in the range whose crossed axes angle of said crossing Rhine-like texture is 0.1-45 degrees.

[Claim 3] The magnetic-recording medium according to claim 1 or 2 whose ratio of the coercive force of the circumferencial direction to the radial coercive force of said magnetic-recording medium is 1.1 or more.

[Claim 4] The Rhine-like texture which performs mechanical texture processing to the front face of a disk-like glass substrate, and intersects it is formed. Subsequently, the amorphous film which contains nickel and P at least by the spatter is formed in the front face in which this Rhine-like texture was formed. Subsequently, the disk-like substrate with which this amorphous film was formed is held in the atmospheric air of a room temperature. The manufacture approach of a magnetic-recording medium of having a magnetic anisotropy in the circumferencial direction characterized by forming the substrate film, magnetic film, and protective coat which heat an after this disk-like substrate and consist of Cr or a Cr alloy by the spatter on said amorphous film.

[Claim 5] The Rhine-like texture which performs mechanical texture processing to the front face of a disk-like glass substrate, and intersects it is formed. Subsequently, the amorphous film which contains nickel and P at least by the spatter is formed in the front face in which this Rhine-like texture was formed. Subsequently, the disk-like substrate with which this amorphous film was formed is held in the ambient atmosphere containing oxygen. The manufacture approach of a magnetic-recording medium of having a magnetic anisotropy in the circumferencial direction characterized by forming the substrate film, magnetic film, and protective coat which heat an after this disk-like substrate and consist of Cr or a Cr alloy by the spatter on said amorphous film.

[Claim 6] The manufacture approach of a magnetic-recording medium of having a magnetic anisotropy in the circumferencial direction according to claim 4 or 5 in the range whose crossed axes angle of said Rhine-like texture is 0.1-45 degrees.

[Translation done.]

* NOTICES *

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to a magnetic-recording medium especially the magnetic-recording medium which has a magnetic anisotropy, and its manufacture approach.
[0002]
[Description of the Prior Art] Generally the substrate which comes to form the NiP film in the front face of an aluminum substrate by the electroless deposition method as a substrate for hard magnetic disks is used. Mechanical texture processing is performed to this NiP film surface, a Rhine-like texture (henceforth a texture line) is formed, the magnetic-recording medium obtained by subsequently carrying out sequential formation of the substrate film, a magnetic film, and the protective coat by the spatter has a magnetic anisotropy in the direction of a texture line, and coercive force improves. High coercive force is desirable at the point which narrows densification of record, and isolated playback wave time amount half-value width (PWSO).
[0003] On the other hand, a glass substrate has the property which was [goodness / hard nature / of display flatness] excellent as a substrate for hard magnetic disks. In this case, the NiP film by the electroless deposition method aiming at surface hard-izing is not needed.
[0004] Then, although to perform mechanical texture processing directly on the surface of a glass substrate, and to form an effective texture line was desired in order to obtain the magnetic-recording medium which has a magnetic anisotropy using a glass substrate, there were few faults, such as weld flash and a crack, until now, and formation of a useful texture line was not industrially easy. bird origin established the approach of making this possible recently (Japanese-Patent-Application-No. No. 279237 [11 to] specification). However, when sequential formation of Cr system substrate film, Co system magnetic film, and the protective coat is carried out by the spatter on the glass substrate which formed the texture line by this approach, a magnetic anisotropy does not appear and cannot acquire high coercive force.
[0005]
[Problem(s) to be Solved by the Invention] The purpose of this invention is to offer the magnetic-recording medium which has a magnetic anisotropy using the disk-like glass substrate which established the texture line in the front face by mechanical texture processing, and its manufacture approach.
[0006]
[Means for Solving the Problem] the magnetic recording medium which be a magnetic recording medium which consist of the substrate film, the Co system magnetic film, and the protective coat which consist of the disk-like glass substrate with which the Rhine-like texture (a texture line) which this invention tend to solve the above-mentioned technical problem, and cross be formed in the front face, the amorphous film which contain at least the nickel and the P P be formed of the spatter on it, Cr, or a Cr alloy, and be characterize by have a magnetic anisotropy in a circumferencial direction be offer.
[0007] The texture line in this invention usually consists of a curve which is running in the direction in alignment with a periphery, crossing. The angle opened in the direction in alignment with a periphery and the angle opened to radial have the angle which the texture line currently run in the direction in alignment with a periphery crosses, and is made, and those sums are 180 degrees. In this invention, a crossed axes angle means the angle opened in the direction in alignment with the above-mentioned periphery.
[0008] If the range of 0.1-45 degrees is desirable and includes viewpoints, such as the productivity of mechanical texture processing, further in the magnetic-recording medium of this invention, it is appropriate for the crossed axes angle of said crossing texture line to choose from the range of 0.1-25 degrees. Moreover, this invention has a magnetic anisotropy in a circumferencial direction, and offers the magnetic-recording medium whose ratio of the coercive force of the circumferencial direction to radial coercive force is 1.1 or more about coercive force.
[0009] Moreover, this invention forms the Rhine-like texture which obtains the magnetic-recording medium of this this invention and which performs mechanical texture processing to the front face of a disk-like glass substrate, and intersects it as an approach. Subsequently, the amorphous film which contains nickel and P at least by the spatter is formed in the front face in which this Rhine-like texture was formed. Subsequently, the disk-like substrate with which this amorphous film was formed is held in the atmospheric air of a room temperature. The circumferencial direction characterized by forming the substrate film, magnetic film, and protective coat which heat an after this disk-like substrate and consist of Cr or a Cr alloy by the spatter on said amorphous film is provided with the manufacture approach of a magnetic-recording medium of having a

magnetic anisotropy.
[0010] Moreover, this invention forms the Rhine-like texture which obtains the magnetic-recording medium of this invention and which performs mechanical texture processing to the front face of a disk-like glass substrate, and intersects it as an approach. Subsequently, the amorphous film which contains nickel and P at least by the spatter is formed in the front face in which this Rhine-like texture was formed. Subsequently, the disk-like substrate with which this amorphous film was formed is held in the ambient atmosphere containing oxygen. The circumferencial direction characterized by forming the substrate film, magnetic film, and protective coat which heat an after this disk-like substrate and consist of Cr or a Cr alloy by the spatter on said amorphous film is provided with the manufacture approach of a magnetic-recording medium of having a magnetic anisotropy.
[0011] In the manufacture approach of the magnetic-recording medium of this invention, if the range of 0.1-45 degrees is desirable and includes viewpoints, such as the productivity of mechanical texture processing, further, it is appropriate for the crossed axes angle of a Rhine-like texture to choose from the range of 0.1-25 degrees.
[0012]
[Example] (Example) the texture line was formed in the front face of the disk-like glass substrate which consists of alumino silicate glass by the approach (Japanese-Patent-Application-No. No. 279237 [11 to] specification) of bird origin.
[0013] Using the loose grain slurry which contains the microfilament textiles tape made from polyethylene, a polycrystal diamond abrasive grain with a mean particle diameter of 0.2 micrometers, and a cerium oxide abrasive grain with a mean particle diameter of 0.3 micrometers for the disk-like glass substrate front face with a diameter of 65mm which carried out the chemical strengthening directly, the texture machine performed mechanical texture processing and the texture line was formed. The used loose grain slurry was that in which a polycrystal diamond is contained with a mass ratio and it contains a cerium oxide abrasive grain at 5% of a rate 0.03% to the whole loose grain slurry.
[0014] The glass substrate was rotating centering on the core of a circle, the above-mentioned tape was equally pushed from glass substrate both sides with the roller, and mechanical texture processing was performed by dropping the above-mentioned loose grain slurry on the outskirts of the contact section of the above-mentioned tape and a glass substrate. In order to give a crossed axes angle desirable as a texture line, the oscillation (the circular motion or reciprocating motion) of a roller or the glass substrate was made to carry out in the direction which is parallel to the surface of revolution of a glass substrate, and is different from a hand of cut. A desired crossed axes angle can be obtained by controlling the rotational frequency of a glass substrate, the mode of an oscillation, etc.
[0015] In this example, for glass substrate rotational frequency 130rpm, and floor-to-floor-time 60 seconds, mechanical texture processing is performed on the above-mentioned loose grain slurry flow rate of 18g / 60 seconds/page of conditions, and a crossed axes angle is 13 degrees.
[0016] Next, on the front face of a glass substrate in which the texture line was formed as mentioned above, nickel80P20 film (a figure is the same atomic % and the following) was first formed by the spatter. After exhausting membrane formation up to 1.3x10 to 4 Pa by the ultimate vacuum, 0.6Pa of Ar gas pressure performed it at the room temperature. This NiP film is amorphous and thickness could be 50nm.
[0017] Next, the glass substrate in which the above-mentioned NiP amorphous film was formed was exposed into the atmospheric air of the room temperature of a drawing clean room from the spatter chamber (maintenance).
[0018] Subsequently, after introducing again into the spatter chamber the glass substrate exposed into the atmospheric air of the above-mentioned room temperature and exhausting up to 1.3x10 to 4 Pa by the ultimate vacuum, the Cr80Mo20 substrate film (20nm of thickness) and Co69Cr17Ta4Pt10 magnetic film were formed by the spatter in this order by the substrate temperature of 250 degrees C, and 0.6Pa of Ar gas pressure. Subsequently, after forming a carbon system protective coat by the spatter, perfluoro polyether system lubricating film was prepared on this protective coat, and it considered as the sample of the example of this invention.
[0019] (Example 1 of a comparison) Without having formed the nickel80P 20 amorphous film in the front face of a glass substrate in which the texture line was formed like the example by the spatter, and being exposed into the atmospheric air of the room temperature of a clean room after that, sequential formation of the substrate film, an aforementioned magnetic film, and an aforementioned protective coat was succeedingly carried out on the same conditions as an example by the spatter, and subsequently said lubricating film was prepared and it considered as the sample of the example 1 of a comparison.
[0020] (Example 2 of a comparison) Without having not formed the NiP amorphous film in the front face of a glass substrate in which the texture line was formed like the example, and being exposed into the atmospheric air of the room temperature of a clean room, sequential formation of the substrate film, an aforementioned direct magnetic film, and a direct aforementioned protective coat was carried out by the spatter on the same conditions as an example, and subsequently said lubricating film was prepared and it considered as the sample of the example 2 of a comparison.
[0021] The coercive force (Hc) of each sample of an example, the example 1 of a comparison, and the example 2 of a comparison was measured as a property which shows a magnetic anisotropy. The coercive force (Hc) of

the circumferencial direction of each sample is shown in drawing 1 . Moreover, the ratio of the coercive force of the circumferencial direction to the radial coercive force of each sample is shown in drawing 2 .

[0022] The magnetic-recording media of the example 1 of a comparison which does not pass through the process exposed into the after [formation] atmospheric air of the NiP amorphous film are low coercive force and a low coercive force ratio (about 1.02) as compared with the magnetic-recording medium obtained by the manufacture approach of this invention. Moreover, the example 2 of a comparison without the NiP amorphous film is also known by that they are low coercive force and a low coercive force ratio (about 1.05 a little less than) as compared with the magnetic-recording medium of this invention.

[0023] On the other hand, high coercive force and a high coercive force ratio (about 1.15) are obtained between formation of the NiP amorphous film, and substrate film formation by the magnetic-recording medium (example) of this invention which performed exposure into atmospheric air, and it is clear to have a magnetic anisotropy remarkable in a circumferencial direction. Although the example exposed the glass substrate which formed the NiP amorphous film by the spatter into the atmospheric air of the room temperature of a drawing clean room from the spatter chamber instead, the same result as the above was obtained also in the sample at the time of holding in the ambient atmosphere containing the oxygen introduced in the spatter chamber.

[0024]

[Effect of the Invention] The magnetic-recording medium of this invention has a remarkable magnetic anisotropy and high coercive force. Moreover, according to the manufacture approach of this invention, with the conventional technique, the magnetic-recording medium of high coercive force with the high and magnetic anisotropy which was not acquired can be obtained using the disk-like glass substrate in which the direct Rhine-like texture was formed on the front face.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] Drawing showing the coercive force of the example of this invention, the example 1 of a comparison, and the example 2 of a comparison.
[Drawing 2] Drawing showing the coercive force ratio in the example, the example 1 of a comparison, and the example 2 of a comparison of this invention.

[Translation done.]

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審査請求　未請求　請求項の数６　ＯＬ　（全４頁）

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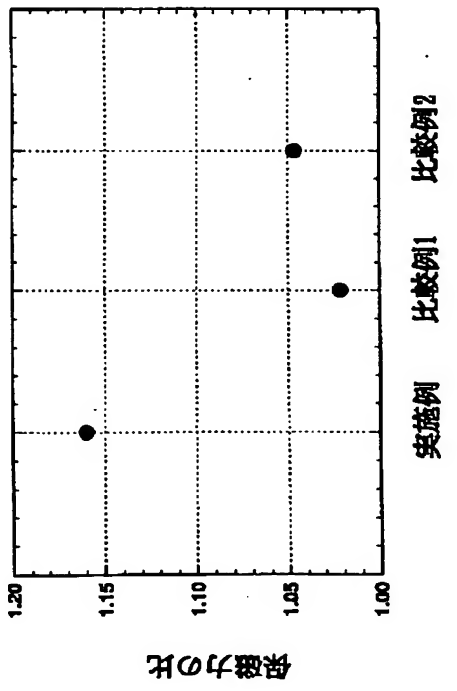
最終頁に続く

(54)【発明の名称】　磁気記録媒体とその製造方法

(57)【要約】
【課題】ガラス基板を用いた高い磁気異方性と保磁力を有する磁気記録媒体の提供。
【解決手段】ガラス基板表面にライン状のテクスチャを形成し、次いでスパッタ法によりＮｉとＰを少なくとも含むアモルファス膜を形成し、次いで該アモルファス膜が形成されたディスク状基板を室温の大気中に保持し、そののち該基板を加熱して前記アモルファス膜の上にスパッタ法によりＣｒ系下地膜、Ｃｏ系磁性膜、保護膜を順次形成する。



【特許請求の範囲】
【請求項１】交差するライン状テクスチャが表面に形成されたディスク状ガラス基板、その上にスパッタ法により形成されたＮｉとＰを少なくとも含むアモルファス膜、ＣｒまたはＣｒ合金からなる下地膜、Ｃｏ系磁性膜および保護膜からなる磁気記録媒体であって、かつ円周方向に磁気異方性を有することを特徴とする磁気記録媒体。
【請求項２】前記交差するライン状テクスチャの交差角が０．１～４５°の範囲にある請求項１記載の磁気記録媒体。
【請求項３】前記磁気記録媒体の半径方向の保磁力に対する円周方向の保磁力の比が１．１以上である請求項１または２記載の磁気記録媒体。
【請求項４】ディスク状ガラス基板の表面に機械的テクスチャ加工を施して交差するライン状テクスチャを形成し、次いで該ライン状テクスチャが形成された表面にスパッタ法によりＮｉとＰを少なくとも含むアモルファス膜を形成し、次いで該アモルファス膜が形成されたディスク状基板を室温の大気中に保持し、そののち該ディスク状基板を加熱して前記アモルファス膜の上にスパッタ法によりＣｒまたはＣｒ合金からなる下地膜、磁性膜および保護膜を形成することを特徴とする円周方向に磁気異方性を有する磁気記録媒体の製造方法。
【請求項５】ディスク状ガラス基板の表面に機械的テクスチャ加工を施して交差するライン状テクスチャを形成し、次いで該ライン状テクスチャが形成された表面にスパッタ法によりＮｉとＰを少なくとも含むアモルファス膜を形成し、次いで該アモルファス膜が形成されたディスク状基板を酸素を含む雰囲気中に保持し、そののち該ディスク状基板を加熱して前記アモルファス膜の上にスパッタ法によりＣｒまたはＣｒ合金からなる下地膜、磁性膜および保護膜を形成することを特徴とする円周方向に磁気異方性を有する磁気記録媒体の製造方法。
【請求項６】前記ライン状テクスチャの交差角が０．１～４５°の範囲にある請求項４または５記載の円周方向に磁気異方性を有する磁気記録媒体の製造方法。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は磁気記録媒体、特に磁気異方性を有する磁気記録媒体とその製造方法に関する。
【０００２】
【従来の技術】ハード磁気ディスク用基板としてアルミニウム基板の表面に無電解メッキ法によりＮｉＰ膜が形成されてなる基板が一般的に用いられている。このＮｉＰ膜面に機械的テクスチャ加工を施してライン状のテクスチャ（以下テクスチャラインとも言う）を形成し、次いでスパッタ法により下地膜、磁性膜、保護膜を順次形成して得られる磁気記録媒体は、テクスチャラインの方向に磁気異方性を有し、保磁力は向上する。高保磁力は、記録の高密度化および孤立再生波時間半値幅（ＰＷ５０）を狭くする点で望ましい。
【０００３】一方、ハード磁気ディスク用基板としてガラス基板は硬質性や平坦度の良さ等の優れた特性をもつ。この場合表面の硬質化を目的とした無電解メッキ法によるＮｉＰ膜は必要としない。
【０００４】そこでガラス基板を用いて磁気異方性を有する磁気記録媒体を得るために、ガラス基板の表面に直接に機械的テクスチャ加工を施して有効なテクスチャラインを形成することが望まれるが、これまでバリ、クラック等の欠点が少なく、工業的にも有用なテクスチャラインの形成は容易ではなかった。最近鳥元らはこれを可能とする方法を確立した（特願平１１－２７９２３７号明細書）。しかしこの方法によりテクスチャラインを形成したガラス基板上にスパッタ法によりＣｒ系下地膜、Ｃｏ系磁性膜、保護膜を順次形成した場合に磁気異方性は出現せず、高保磁力を得ることはできない。
【０００５】
【発明が解決しようとする課題】本発明の目的は、機械的テクスチャ加工により表面にテクスチャラインを設けたディスク状ガラス基板を用い磁気異方性を有する磁気記録媒体とその製造方法を提供することにある。
【０００６】
【課題を解決するための手段】本発明は上記の課題を解決しようとするものであり、交差するライン状テクスチャ（テクスチャライン）が表面に形成されたディスク状ガラス基板、その上にスパッタ法により形成されたＮｉとＰを少なくとも含むアモルファス膜、ＣｒまたはＣｒ合金からなる下地膜、Ｃｏ系磁性膜および保護膜からなる磁気記録媒体であって、かつ円周方向に磁気異方性を有することを特徴とする磁気記録媒体を提供する。
【０００７】本発明におけるテクスチャラインは、通常、交差しつつ円周に沿った方向に走っている曲線からなる。円周に沿った方向に走っているテクスチャラインが交差してなす角は、円周に沿った方向に開いた角と、半径方向に開いた角があり、それらの和は１８０°である。本発明において交差角とは、上記円周に沿った方向に開いた角をいう。
【０００８】本発明の磁気記録媒体において前記交差するテクスチャラインの交差角は０．１～４５°の範囲が好ましく、さらに機械的テクスチャ加工の生産性などの観点を含めると０．１～２５°の範囲から選択することが適当である。また、本発明は円周方向に磁気異方性を有し、保磁力については、半径方向の保磁力に対する円周方向の保磁力の比が１．１以上である磁気記録媒体を提供する。
【０００９】また本発明は、かかる本発明の磁気記録媒体を得る方法として、ディスク状ガラス基板の表面に機械的テクスチャ加工を施して交差するライン状テクスチ

ャを形成し、次いで該ライン状テクスチャが形成された表面にスパッタ法によりＮｉとＰを少なくとも含むアモルファス膜を形成し、次いで該アモルファス膜が形成されたディスク状基板を室温の大気中に保持し、そののち該ディスク状基板を加熱して前記アモルファス膜の上にスパッタ法によりＣｒまたはＣｒ合金からなる下地膜、磁性膜および保護膜を形成することを特徴とする円周方向に磁気異方性を有する磁気記録媒体の製造方法を提供する。

【００１０】また本発明は、本発明の磁気記録媒体を得る方法として、ディスク状ガラス基板の表面に機械的テクスチャ加工を施して交差するライン状テクスチャを形成し、次いで該ライン状テクスチャが形成された表面にスパッタ法によりＮｉとＰを少なくとも含むアモルファス膜を形成し、次いで該アモルファス膜が形成されたディスク状基板を酸素を含む雰囲気中に保持し、そののち該ディスク状基板を加熱して前記アモルファス膜の上にスパッタ法によりＣｒまたはＣｒ合金からなる下地膜、磁性膜および保護膜を形成することを特徴とする円周方向に磁気異方性を有する磁気記録媒体の製造方法を提供する。

【００１１】本発明の磁気記録媒体の製造方法において、ライン状テクスチャの交差角は０．１～４５°の範囲が好ましく、さらに機械的テクスチャ加工の生産性などの観点を含めると０．１～２５°の範囲から選択することが適当である。

【００１２】

【実施例】（実施例）アルミノシリケートガラスからなるディスク状ガラス基板の表面に鳥元らの方法（特願平１１－２７９２３７号明細書）によりテクスチャラインを形成した。

【００１３】直径６５mmの化学強化したディスク状ガラス基板表面を直接、ポリエチレン製微細繊維織物テープと、平均粒径０．２μmの多結晶ダイヤモンド砥粒および平均粒径０．３μmの酸化セリウム砥粒を含有する遊離砥粒スラリーを用い、テクスチャマシンにて機械的テクスチャ加工を行いテクスチャラインを形成した。使用した遊離砥粒スラリーは、遊離砥粒スラリー全体に対して質量比で多結晶ダイヤモンドを０．０３%、酸化セリウム砥粒を５%の割合で含有するものであった。

【００１４】ガラス基板は円の中心を軸に回転しており、ローラーにより上記テープをガラス基板両側から均等に押しつけ、上記遊離砥粒スラリーを上記テープとガラス基板の接触部周辺に滴下することにより機械的テクスチャ加工を行った。テクスチャラインとして望ましい交差角を持たせるために、ローラーまたはガラス基板を、ガラス基板の回転面に平行で回転方向と異なる方向にオシレーション（円運動または往復運動）させた。ガラス基板の回転数、オシレーションのモードなどを制御することにより所望の交差角を得ることができる。

【００１５】本実施例ではガラス基板回転数１３０ｒｐｍ、加工時間６０秒、上記遊離砥粒スラリー流量１８ｇ／６０秒／面の条件で機械的テクスチャ加工を行い、交差角は１３°である。

【００１６】次に上記のようにしてテクスチャラインが形成されたガラス基板の表面に、まず$Ni_{80}P_{20}$膜（数字は原子%、以下同じ）をスパッタ法により成膜した。成膜は、到達真空度で１．３×10^{-4}Ｐａまで排気した後、Ａｒガス圧０．６Ｐａで室温で行った。このＮｉＰ膜はアモルファスであり、膜厚は５０ｎｍとした。

【００１７】次に上記ＮｉＰアモルファス膜を形成したガラス基板をスパッタチャンバから取出しクリーン室の室温の大気中に曝露（保持）した。

【００１８】次いで上記室温の大気中に曝露したガラス基板を再度スパッタチャンバに導入し、到達真空度で１．３×10^{-4}Ｐａまで排気した後、基板温度２５０℃、Ａｒガス圧０．６ＰａでＣｒ$_{80}$Ｍｏ$_{20}$下地膜（膜厚２０ｎｍ）、$Co_{69}Cr_{17}Ta_4Pt_{10}$磁性膜をこの順でスパッタ法により形成した。次いでスパッタ法によりカーボン系保護膜を形成したのち該保護膜の上にパーフルオロポリエーテル系潤滑膜を設けて本発明の実施例の試料とした。

【００１９】（比較例１）実施例と同様にしてテクスチャラインが形成されたガラス基板の表面に、スパッタ法により$Ni_{80}P_{20}$アモルファス膜を形成し、その後クリーン室の室温の大気中に曝露することなく、引続きスパッタ法により前記の下地膜、磁性膜および保護膜を実施例と同じ条件で順次形成し、次いで前記潤滑膜を設けて比較例１の試料とした。

【００２０】（比較例２）実施例と同様にしてテクスチャラインが形成されたガラス基板の表面に、ＮｉＰアモルファス膜を形成せず、またクリーン室の室温の大気中に曝露することもなく、直接前記の下地膜、磁性膜および保護膜を実施例と同じ条件でスパッタ法により順次形成し、次いで前記潤滑膜を設けて比較例２の試料とした。

【００２１】磁気異方性を示す特性として実施例、比較例１および比較例２の各試料の保磁力（H_c）を測定した。図１に各試料の円周方向の保磁力（H_c）を示す。また図２に各試料の半径方向の保磁力に対する円周方向の保磁力の比を示す。

【００２２】ＮｉＰアモルファス膜の形成後大気中に曝露するプロセスを経ない比較例１の磁気記録媒体は、本発明の製造方法により得られる磁気記録媒体と比較して、低保磁力、低保磁力比（約１．０２）である。またＮｉＰアモルファス膜をもたない比較例２も本発明の磁気記録媒体と比較して、低保磁力、低保磁力比（約１．０５弱）であることがわかる。

【００２３】一方、ＮｉＰアモルファス膜の形成と下地膜形成の間に大気中への曝露を行った本発明の磁気記録

媒体（実施例）では、高保磁力かつ高保磁力比（約１．１５）が得られており、円周方向に顕著な磁気異方性を有することが明らかである。実施例はスパッタ法によりＮｉＰアモルファス膜を形成したガラス基板をスパッタチャンバから取出しクリーン室の室温の大気中に曝露したが、そのかわりに、スパッタチャンバ内に導入した酸素を含む雰囲気中に保持した場合の試料においても上記と同様な結果が得られた。

【００２４】

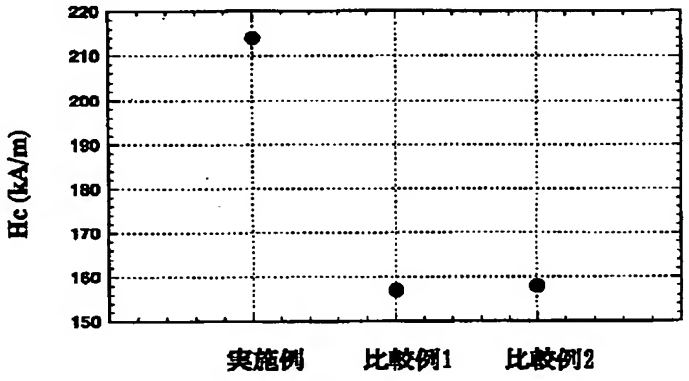
【発明の効果】本発明の磁気記録媒体は顕著な磁気異方性および高い保磁力を有する。また本発明の製造方法によれば、表面に直接ライン状のテクスチャを形成したディスク状ガラス基板を用いて従来技術では得られなかった磁気異方性の高いかつ高保磁力の磁気記録媒体を得ることができる。

【図面の簡単な説明】

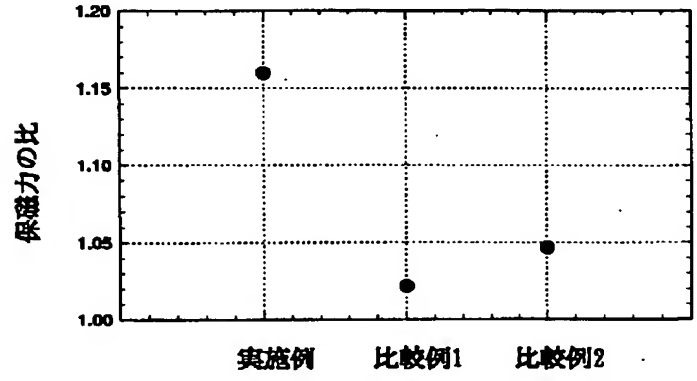
【図１】本発明の実施例、比較例１および比較例２の保磁力を示す図。

【図２】本発明の実施例、比較例１および比較例２における保磁力比を示す図。

【図１】



【図２】



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